

NONVOLATILE SEMICONDUCTOR MEMORY AND OPERATING METHOD OF THE MEMORY

5 **Related Applications**

*TNI
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[0001] This application claims priority to and is a continuation-in-part application
new U.S. Patent No. 6,690,601,
of U.S. Patent Application No. 10/113,356, which has a filing date of March 29, 2002.
The above application 10/113,356 is hereby incorporated by reference herein.

10 **Field of the Invention**

[0002] The invention generally relates to semiconductor memory devices and more particularly to a nonvolatile semiconductor memory cell storing electrons in an erase state, and its operating method.

15 **Description of the Related Art**

[0003] Memory devices for nonvolatile storage of information are in widespread use in the art. Exemplary nonvolatile semiconductor memory devices include read only memory (ROM), programmable read only memory (PROM), erasable programmable read only memory (EPROM), electrically erasable programmable read
20 only memory (EEPROM) and flash EEPROM.

[0004] Flash EEPROMs are similar to EEPROMs in that memory cells can be programmed (i.e., written) and erased electrically but with the additional capability of erasing all memory cells at once. The widespread use of EEPROM semiconductor memory has prompted much research focusing on developing an EEPROM memory